## RIVER STAGES AND FLOODS FOR JANUARY 1948

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Precipitation during January was above normal along the coastal sections of the Atlantic and the Gulf States, from Massachusetts to eastern Texas. It was also above normal in the Columbia Basin and the eastern portion of the Rocky Mountain States. Precipitation was heavy over the greater portion of the latter two areas and ranged from one and one-half to two times the normal seasonal amounts. It was very light and averaged less than 50 percent of normal from California eastward to Colorado and New Mexico and along the Mississippi River Basin.

There was very little snow accumulation during the first half of the month east of the Rockies south of latitude 40°. The heavy snow that fell in the Texas Panhandle and Oklahoma during the beginning of the month melted quickly due to the unseasonably mild temperatures. On the 17th and 18th heavy snow fell over a large area extending from northeastern Texas to southern New England, covering the ground to a depth of one to several inches. Ten to twelve inches fell in northern Tennessee and southern and eastern Arkansas. Frequent light to heavy snow, plus persistent low temperatures from the 17th to the 26th of January, advanced the snow cover to its farthest southern limits, and by the latter date snow cover extended along a line from the northeastern corner of North Carolina to San Antonio, Tex. By the end of the month most of the snow in the southern States had melted, with snow cover remaining in only the northern portions of those States.

At the beginning of the month, several small streams in the Northeastern States as far south as central Pennsylvania had frozen over, with the ice varying in thickness from 3 inches in Pennsylvania to 20 inches at Greenville, Maine. Only shore ice was reported in the larger streams near the coast. In the upper Mississippi and Missouri Valleys the ice varied in thickness from 8 inches, at La Crosse, Wis., to 19 inches, at Bismarck, N. Dak. By the end of the month, floating ice was observed in the Mississippi River as far south as Memphis, Tenn., and in the Ohio River from Cincinnati, Ohio, to Evansville, Ind., with the upper reaches of the two rivers frozen over to considerable depths. Along the East Coast streams were frozen over as far south as Washington, D. C., with 6 inches of ice estimated on the lower Potomac at Washington. In the upper Mississippi and Missouri Valleys, the ice had increased in thickness to 17.5 inches at La Crosse, Wis., and varied from 11.5 inches at Des Moines, Iowa, to 26.5 inches at Bismarck, N. Dak.

Temperatures during January were below normal east of the Rockies except in the Northern and Central Great Plains and the Northern Rocky Mountain Region. It was unusually mild for the first 2 weeks, but the rest of the month was so frigid that it turned out to be one of the coldest on record. For two whole weeks, temperatures at New Orleans, La., and Vicksburg, Miss., averaged 11° to 15° below normal. In the Western States the other extreme prevailed. In Montana, for example, they averaged 4° to 10° above normal. The two Dakotas averaged 2° to 8° above normal.

The drought in Maine continued unabated for the 6th consecutive month. Stream flow was far below normal in a large area extending southwestward from Maine to northern Mississippi. Light flooding occurred along the Atlantic at scattered points from Maryland to Georgia. In Florida run-off continued excessive, while in central and southern California and the southern intermountain region, drought conditions continued unalleviated. Some flooding occurred along the Mississippi River System and in Texas. From the 6th to the 12th, moderate floods occurred in western Oregon in the Willamette River Basin.

*Atlantic Slope drainage.*—Only minor flooding occurred during the month along the Atlantic Slope from Maryland to Georgia. The light flooding in Maryland occurred on the Monocacy River on the 2d from the heavy rain that occurred on New Year's Day. The rainfall over the Monocacy Basin, which averaged 2.25 inches, caused a sharp rise in the river at Frederick, Md., to nearly 6 feet above flood stage, with little or no damage occurring. Moderate rises also occurred over the Potomac Basin, but no flood stages were reached. In North Carolina, slight flooding occurred along the Roanoke, Neuse, and Cape Fear Rivers around the middle of the month from the heavy rain (1.50 inches) that fell over the watersheds on the 13th. In Georgia, light flooding continued on the Ogeechee and Altamaha Rivers during the beginning of the month from the effects of the December rainfall. Frequent rainfall after the 12th caused additional light flooding on these rivers during the latter half of the month. No material damage resulted from the flooding along this drainage area. The principal losses were to logging interests that had to suspend operations during high water. The inundation of farm bottom land was not especially detrimental since very little planting had been done.

*East Gulf of Mexico drainage.*—Only minor flooding occurred in this drainage area during the month. The Apalachicola River continued in flood at Blountstown, Fla., during the first week of January, from the effect of the rainfall during December. It was again in flood during the last week of the month. The Tombigbee River at Lock No. 3 went above flood stage on the 31st and continued in flood until February 6th. No damage was reported.

*Mississippi System.*—Heavy rains of between 1 to 2 inches fell over the Ohio Basin on January 1 and caused light flooding on the Monongahela in Pennsylvania, the Scioto in Ohio, and the West Fork and Wabash Rivers in Indiana. The temperatures over the basin averaged above freezing during the storm period, with very little if any snow on the ground. No damages were reported in the Ohio Basin from the overflows.

The flooding that occurred in the White, Arkansas, and Red Basins was caused by heavy rains that began on December 31. Considerable damage and loss was reported from the smaller tributaries in the Arkansas and Red Basins where run-off was rapid. The greatest stock loss was on the Petit Jean River in Arkansas where about 20 head of cattle were drowned.

Flooding in the Lower Mississippi Basin along the St. Francis River was due to heavy rain, averaging more than 3.50 inches, that occurred on December 31 and January 1. Flash floods occurred in the St. Francis Basin in the hilly area above Wappapello Dam. The damages resulting from these flash floods were principally to livestock and crops. Additional damage was reported near Fisk, Mo.

*West Gulf of Mexico drainage.*—General rains over Texas on December 31, caused flooding along the Sabine and upper Trinity Rivers during the first few days of January. The rainfall was not excessive but the run-off from this rain was heavy, as the ground was still saturated from the earlier December rains. The crest stages reached are given in the table of flood stages at the end of this report. No damages were reported.

*Pacific drainage.*—Exceptionally heavy rains occurred over the Shasta Reservoir in the Sacramento River Basin

drainage during the first week in January. These rains were caused by the movement of a series of fronts inland over the Pacific Northwest. The rains were lighter southward over the elevated areas of the Feather and American Rivers. No flooding occurred, as the streams were very low prior to this rainy period. There had been no heavy rain over this basin since October. Heavy local run-off, however, from the steep slopes in the Sacramento River Canyon washed out a section of the Southern Pacific's railroad tracks about 3 miles south of Dunsmuir. The streams receded to unusually low stages by the 31st, as no rain fell over the basin after the 8th of the month. There was also a marked deficiency in the mountain snowpack. At the end of January only a few inches of snow remained on the higher slopes of the Sierra Nevada Mountains. This was the least snow observed in these mountains on the 31st of January in a period of 50 years.

In the Eel River Basin light flooding occurred on the Eel River on the 8th, as a result of the heavy rain which fell over the basin on the 5th and 6th. Two summer bridges were destroyed during the first onrush of the flood waters.

Vast lowland areas of Oregon, Washington, and Idaho in the Columbia River Basin, were inundated as flooding rivers swept through widely scattered valleys of the Pacific Northwest States from the 6th to the 10th of January. It was the severest flood in this area since December 1945. Large amounts of the mountain snows were melted by the rain and warm winds that occurred over the basin during the first 7 days of the month. This rainy period was caused by a series of fronts that passed inland over the Northwestern States. The McKenzie River crested at Leaburg, Oreg., on the 7th at a stage of 19.9 feet, 7.9 feet above flood stage, and at Armitage Bridge on the same date at 15.7 feet, 4.7 feet above flood stage. The Santiam River crested at Jefferson City, Oreg., on the 7th at a stage of 21.8 feet, 8.8 feet above flood stage or 1.2 feet below the record stage of 23.0 feet. The South Yamhill River crested at a record stage of 42.2 feet at Whiteson, Oreg., on the 8th. The Mollalla River crested at a stage of 4.0 feet above flood stage at Canby, Oreg., on the 7th. The Willamette River in Oregon crested at a stage of 3.7 feet above flood stage at Eugene, and 6.8 feet above at Harrisburg on the 7th; 2.8 feet above at Corvallis, and 8.9 feet above at Albany on the 8th; 7.5 feet above at Salem, and 5.0 feet above at Oregon City on the 9th; and 1.4 feet above flood stage at Portland on the 10th. The Columbia River at Vancouver, Wash., reached a stage of 16.5 feet, 1.5 feet above flood stage, on the 10th.

A comparison of this flood with the floods of January 1943 and December 1945, is given in Table 1. The highest crests on record are also given in the table.

TABLE 1.—*Crest stages of floods in the Columbia Basin, including comparison of January 1948 flood with previous floods*

| Station and Drainage | Flood stage | 1948 Crest | | 1945 Crest | | 1942-43 Crest | | Maximum of record | |
|---|---|---|---|---|---|---|---|---|---|
| | | Stage | Date | Stage | Date | Stage | Date | Stage | Date |
| | *Feet* | *Feet* | | *Feet* | | *Feet* | | *Feet* | |
| Middle Fork: Eula, Oreg. | 13 | 13.0 | Jan. 6 | 18.8 | Dec. 28 | 17.0 | Dec. 31 | 18.8 | Dec. 28, 1945 |
| Coast Fork: Saginaw, Oreg. | 9 | 10.7 | do | 12.4 | do | 11.9 | Dec. 30-31 | 12.9 | Feb. 20, 1927 |
| McKenzie River: | | | | | | | | | |
| Leaburg, Oreg. | 12 | 19.9 | Jan. 7 | 25.5 | do | 22.8 | Jan. 1 | [1] 25.5 | Dec. 28, 1945 |
| Armitage Bridge, Oreg. | 11 | 15.7 | do | 17.4 | Dec. 29 | | | | |
| Marys River: Philomath, Oreg. | 20 | 20.5 | do | | | | | | |
| Calapooya River: Holley, Oreg. | 10.5 | 11.0 | do | 14.0 | Dec. 28 | 12.1 | Dec. 31 | | |
| Santiam River: Jefferson, Oreg. | 13 | 21.8 | do | 22.6 | Dec. 29 | 21.3 | Jan. 1 | 23.0 | Nov. 21, 1921 |
| South Yamhill River: | | | | | | | | | |
| Whiteson, Oreg. | 38 | 42.2 | Jan. 8 | 39.8 | Dec. 30 | 40.9 | Dec. 30 | | |
| Molalla River: Canby, Oreg. | 11 | 15.0 | Jan. 7 | 12.2 | Dec. 28-29 | | | | |
| Tualatin River: Dilley, Oreg. | 12 | 12.4 | do | 12.2 | Dec. 29 | | | | |
| Willamette River: | | | | | | | | | |
| Eugene, Oreg. | 12 | 15.7 | do | 18.5 | do | 16.7 | Dec. 31-Jan. 1 | 22.0 | Jan. 25, 1903 |
| Harrisburg, Oreg. | 12 | 18.8 | do | 19.6 | do | 17.1 | Jan. 1 | 19.6 | Dec. 29, 1945 |
| Corvallis, Oreg. | 24 | 26.8 | Jan. 8 | 28.2 | Dec. 30 | 28.1 | Jan. 2 | [1] 28.2 | Dec. 30, 1945 |
| Albany, Oreg. | 20 | 28.9 | do | 30.0 | do | 30.6 | do | 31.3 | Jan. 26, 1903 |
| Salem, Oreg. | 20 | 27.5 | Jan. 9 | 28.4 | do | 30.6 | do | 31.3 | Feb. 6, 1907 |
| Oregon City, Oreg. | 12 | 17.0 | do | 16.5 | Dec. 31 | 18.3 | Jan. 3 | 19.6 | Jan. 9, 1923 |
| Portland, Oreg. | 18 | 19.4 | Jan. 10 | | | 20.2 | do | 33.0 | June 7, 1894 |
| Columbia: Vancouver, Wash. | 15 | 16.5 | do | | | 16.3 | Jan. 4 | 25.5 | June 19, 1933 |

[1] Highest of short period of record.

The U. S. Weather Bureau Regional Office summary of damages from the flood included an estimate of the total damage, excluding that from erosion, amounting to $6,000,000. Erosion losses in agricultural areas, however, were believed greater than the combined total of all other losses. For the most part, in both agricultural and industrial areas adequate precautions were taken in the way of evacuating people, equipment, and supplies to keep losses down. Agricultural losses, to crops, orchards, and livestock, were small, since crops had been harvested and livestock were protected. Industry's greatest loss was 2½ days' operating time. In residential areas losses were confined mostly to real property rather than to personal property. The deaths of two persons have been attributed to the effects of the flood waters.

## FLOOD STAGE REPORT FOR JANUARY 1948

[All dates in January unless otherwise specified]

| River and station | Flood stage | Above flood stages—dates | | Crest [1] | |
|---|---|---|---|---|---|
| | | From— | To— | Stage | Date |
| **ST. LAWRENCE DRAINAGE** | | | | | |
| *Lake Erie* | | | | | |
| | *Feet* | | | *Feet* | |
| Maumee: Defiance, Ohio | 10 | 3 | 3 | 10.6 | 3 |
| **ATLANTIC SLOPE DRAINAGE** | | | | | |
| Monocacy: Frederick, Md | 10 | | | 15.8 | 2 |
| Roanoke: Williamston, N. C | 10 | 19 | 24 | 10.3 | 20 |
| Neuse: | | | | | |
| Neuse, N. C | 14 | 15 | 16 | 15.1 | 16 |
| Smithfield, N. C | 13 | 15 | 18 | 14.3 | 17 |
| Cape Fear: | | | | | |
| Lock No. 2, Elizabethtown, N. C | 20 | 15 | 17 | 23.4 | 16 |
| Edisto: Givhans Ferry, S. C | 10 | Dec. 13 | 8 | 13.4 | Dec. 24 |
| Ogeechee: Dover, Ga | 7 | Dec. 13 | 9 | 9.1 | Dec. 21-22 |
| | | 21 | (2) | 7.4 | 29 |
| Altamaha: | | | | | |
| Charlotte, Ga | 12 | Dec. 11 | 10 | 17.2 | Dec. 27 |
| | | 22 | 22 | 12.0 | 22 |
| | | 25 | (2) | 13.2 | 31 |
| Piney Bluff, Ga | 17 | Dec. 14 | 6 | 18.4 | Dec. 23, 24, 25 |
| **EAST GULF OF MEXICO DRAINAGE** | | | | | |
| Apalachicola: Blountstown, Fla | 15 | Dec. 12 | 6 | 20.5 | Dec. 20 |
| | | 25 | (2) | 16.5 | 29 |
| Tombigbee: Lock No. 3, Ala | 33 | 31 | Feb. 6 | 40.0 | Feb. 3 |
| **MISSISSIPPI SYSTEM** | | | | | |
| *Upper Mississippi Basin* | | | | | |
| Mississippi: Louisiana, Mo | 12 | 3 | 3 | 12.0 | 3 |
| | | 7 | 7 | 12.0 | 7 |
| | | 10 | 12 | 12.0 | 10-12 |
| | | 14 | 14 | 12.0 | 14 |
| | | 21 | 23 | 12.0 | 21-23 |
| *Ohio Basin* | | | | | |
| Monongahela: Lock No. 2, Braddock, Pa | 20.5 | 2 | 2 | 22.7 | 2 |
| Sciota: | | | | | |
| La Rue, Ohio | 11 | 2 | 3 | 12.4 | 2 |
| Circleville, Ohio | 14 | 3 | 3 | 15.0 | 3 |
| West Fork: | | | | | |
| Anderson, Ind | 10 | 1 | 3 | 13.4 | 2 |
| Elliston, Ind | 18 | 3 | 6 | 20.5 | 5 |
| Edwardsport, Ind | 12 | 2 | 9 | 17.6 | 6-7 |
| Wabash: | | | | | |
| Wabash, Ind | 12 | 2 | 3 | 12.9 | 2 |
| La Fayette, Ind | 11 | 3 | 5 | 13.9 | 4 |
| Covington, Ind | 16 | 5 | 5 | 16.1 | 5 |
| *White Basin* | | | | | |
| Black: | | | | | |
| Poplar Bluff, Mo | 16 | 2 | 6 | 18.1 | 3 |
| Black Rock, Ark | 14 | 1 | 15 | 19.8 | 2 |
| *Arkansas Basin* | | | | | |
| Poteau: Poteau, Okla | 21 | 2 | 3 | 29.3 | 2 |
| Petit Jean: Danville, Ark | 20 | 1 | 9 | 25.4 | 1 |

## FLOOD STAGE REPORT FOR JANUARY 1948—Continued

| River and station | Flood stage | Above flood stages—dates | | Crest [1] | |
|---|---|---|---|---|---|
| | | From— | To— | Stage | Date |
| **MISSISSIPPI SYSTEM—continued** | | | | | |
| *Red Basin* | | | | | |
| Ouachita: | *Feet* | | | *Feet* | |
| Arkadelphia, Ark | 17 | 2 | 4 | 21.4 | |
| Camden, Ark | 26 | 4 | 9 | 29.6 | 7 |
| Little: | | | | | |
| Horatio, Ark | | | | 32.4 | 2 |
| Whitecliffs, Ark | 25 | 4 | 8 | 27.4 | 5 |
| Sulphur: | | | | | |
| Hagansport, Tex | 39 | 1 | 5 | 42.5 | 2 |
| Naples, Tex | 22 | 4 | 12 | 27.1 | 6 |
| *Lower Mississippi Basin* | | | | | |
| St. Francis: | | | | | |
| Fisk, Mo | 20 | 2 | 13 | 23.6 | 5,6 |
| St. Francis, Ark | 18 | 5 | 19 | 20.8 | 9,10 |
| **WEST GULF OF MEXICO DRAINAGE** | | | | | |
| Sabine: | | | | | |
| Mineola, Tex | 14 | 2 | 8 | 17.7 | 5 |
| Gladewater, Tex | 26 | Dec. 13 | Dec. 31 | 32.8 | Dec. 24 |
| | | 9 | 13 | 28.2 | 11 |
| Elm Fork: Carrollton, Tex | 6 | 1 | 1 | 6.3 | 1 |
| East Fork: Rockwall, Tex | 10 | 1 | 4 | 14.4 | 2 |
| Trinity: | | | | | |
| Dallas, Tex | 28 | 1 | 3 | 30.8 | 2 |
| Rosser, Tex | 26 | 1 | 5 | 28.1 | 4 |
| Trinidad, Tex | 28 | 4 | 9 | 30.0 | 7 |
| **PACIFIC SLOPE DRAINAGE** | | | | | |
| *Eel Basin* | | | | | |
| Eel: Fernbridge, Calif | 17.5 | 7 | 7 | 18.0 | 7 |
| *Columbia Basin* | | | | | |
| Middle Fork: Eula, Oreg | 13 | 6 | 6 | 13.0 | 6 |
| Coast Fork: Saginaw, Oreg | 9 | 6 | 6 | 10.7 | 6 |
| McKenzie River: | | | | | |
| Leaburg, Oreg | 12 | 2 | 2 | 12.0 | 2 |
| | | 6 | 8 | 19.9 | 7 |
| Armitage Bridge, Oreg | 11 | 6 | 8 | 15.7 | 7 |
| Marys River: Philomath, Oreg | 20 | 7 | 7 | 20.5 | 7 |
| Calapooya River: Holley, Oreg | 10.5 | 7 | 7 | 11.0 | 7 |
| Santiam River: Jefferson, Oreg | 13 | 2 | 3 | 16.0 | 2 |
| | | 6 | 9 | 21.8 | 7 |
| South Yamhill River: Whiteson, Oreg | 38 | 7 | 9 | 42.2 | 8 |
| Molalla River: Canby, Oreg | 11 | 6 | 7 | 15.0 | 7 |
| Tualatin River: Dilley, Oreg | 12 | 7 | 8 | 12.4 | 7 |
| Willamette River: | | | | | |
| Eugene, Oreg | 12 | 7 | 8 | 15.7 | 7 |
| Harrisburg, Oreg | 12 | 3 | 3 | 14.4 | 3 |
| | | 6 | 10 | 18.8 | 7 |
| Corvallis, Oreg | 24 | 8 | 9 | 26.8 | 8 |
| Albany, Oreg | 20 | 7 | 10 | 28.9 | 8 |
| Salem, Oreg | 20 | 7 | 10 | 27.5 | 9 |
| Oregon City, Oreg | 12 | 7 | 12 | 17.0 | 9 |
| Portland, Oreg | 18 | 9 | 11 | 19.4 | 10 |
| Columbia River: Vancouver, Wash | 15 | 9 | 11 | 16.5 | 10 |

[1] Provisional.
[2] Continued at end of month.